

**Document:** PL11-LMC Rapid Set Overlays

**Subject:** High Early Strength Latex Bridge Deck Overlays and Rebound Hammer

For projects with multiple bridges using the same mix design, or bridge decks with time constraints that require more than one night for placement, a relationship between the compressive strength and rebound hammer readings may be developed and used to obtain the three hour cylinder strength, in lieu of compressive strength testing. The Resident Engineer or his representative shall coordinate with the Materials and Tests Unit testing facility at least 48 hours prior to the mix design verification process, to insure that they will have someone scheduled to test cylinders for three hour strengths. Designate one rebound hammer for each mix design, and give the hammer to that project inspector. Be sure that the rebound hammer is within the standardized limits, if it is not within the standardized limits; contact the local Materials and Tests Unit testing facility for assistance. Keep on hand 4" x 8" and 6" x 12" cylinder molds for making test specimens.

During the mix design verification process, cast a minimum of six specimens (four- 4" x 8" cylinders and two- 6" x 12" cylinders) for testing. The 4"x8" cylinders are used for three hour testing in the Laboratory, and the 6"x12" cylinders are used for rebound hammer testing in the field. At approximately three hours, the project inspector shall transport all samples to the Materials and Tests Unit testing facility, and unmold all samples. Test all of the 4" x 8" cylinders for compressive strength in accordance with AASHTO T22. At the same time that the three hour test is being conducted,, obtain 10 rebound hammer readings on each of the 6" x 12" cylinders. For each cylinder, eliminate the highest and lowest values and take the average of the 8 remaining readings. Read the corresponding compressive strength from the rebound hammer and insert the reading into the Excel Spreadsheet to obtain the correction factor to be used with the designated rebound hammer. Document the correction factor and attach it to the designated rebound hammer or place it safely in the case for safe keeping. The three hour strength data may then be obtained by using the designated rebound hammer. If the rebound hammer values obtained during subsequent operations differ by more than 10%, of the values established during the first operation, inform the testing Laboratory. If a different rebound hammer is used, obtain a new calibration factor.

Once the calibration factor is obtained, continue to make 4 specimens (two 4" x 8" cylinders and two 6" x 12" cylinders). Use the rebound hammer on the 6"x12" cylinders at 3 hours and follow the procedures above for obtaining the average value. Multiply that rebound strength by the established correction factor to obtain the estimated strength of the cylinder. Record the value for the project records and deliver the two 4" x 8" and two 6" x 12" cylinders to the lab in the same manner as normal cylinders. Positively identify the two 4" x 8" cylinders for testing at 7 days with all pertinent information. The 6" x 12" cylinders can be removed from their molds and left at the Materials and Tests Unit testing facility for proper storage/removal. If the cylinder molds have not been damaged, they may be reused.